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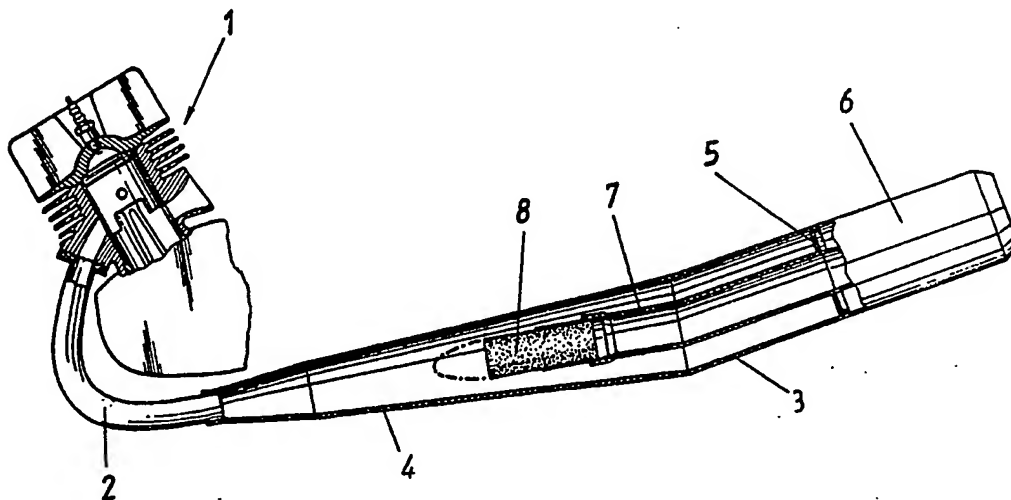
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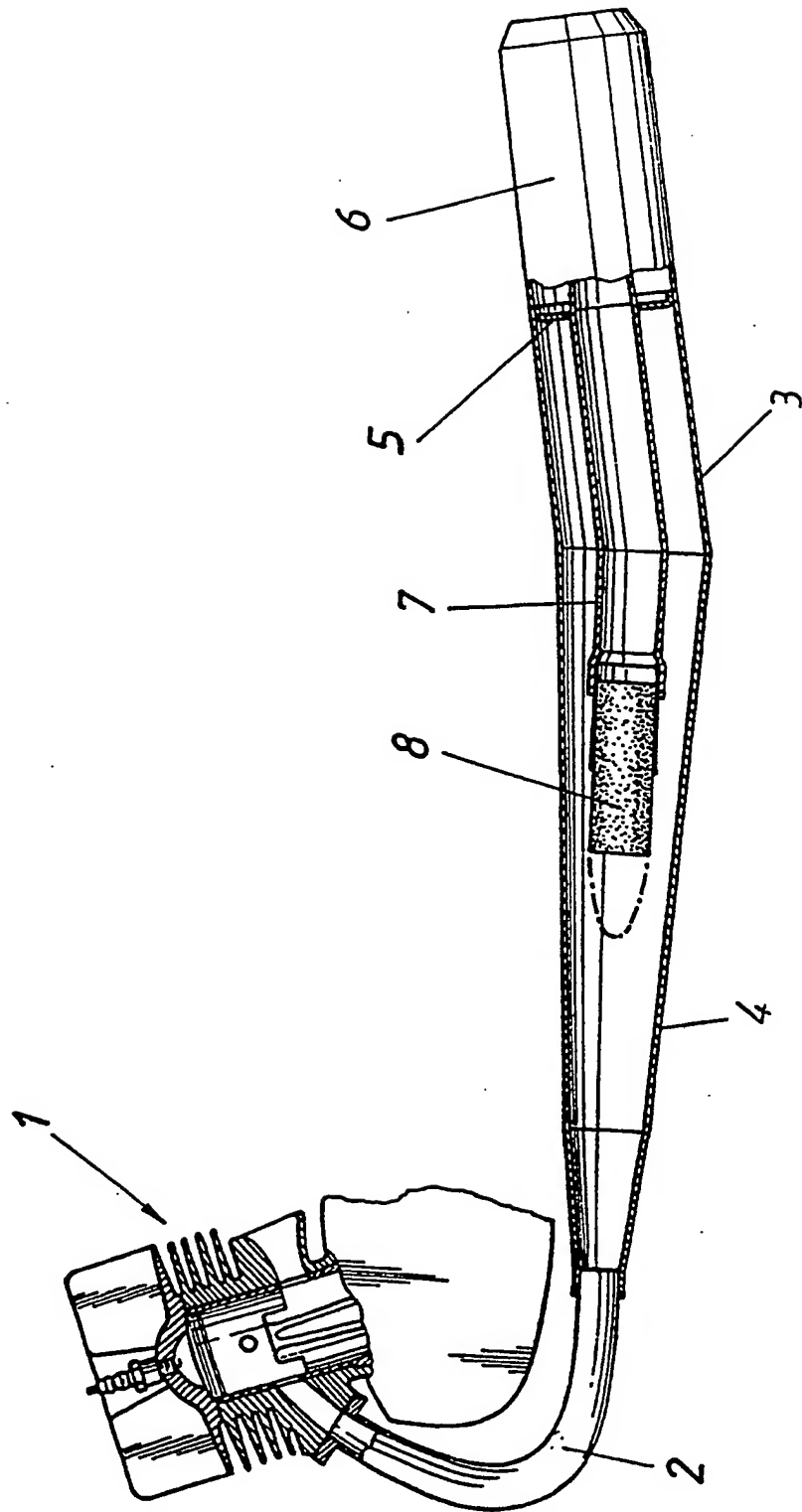
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(54) Exhaust system with catalytic converter for two-stroke engines

(57) The exhaust manifold (2) is connected to a generally cylindrical chamber (3). The chamber (3) is separated from the adjoining silencer (6) by a baffle (5). In order to achieve a good behaviour of the catalytic converter during cold starting and a good degree of conversion without power losses or increase in the fuel consumption of the engine, the catalytic converter (8) is arranged inside the chamber (3). The catalytic converter projects, preferably coaxially, from the end of a discharge pipe (7), directed from the baffle (5) towards the exhaust manifold (2), in such a way that it has the same distance on all sides from the wall of the chamber (3).



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EXHAUST SYSTEM WITH CATALYTIC CONVERTER FOR TWO-STROKE
ENGINE

The invention relates to an exhaust system of combustion products with catalytic converter for two-stroke engines, in which a widening chamber, separated from a silencer by a baffle, adjoins the exhaust manifold.

5 In a generally known exhaust system of this type, the catalytic converter is arranged directly in the exhaust manifold following the cylinder. Although this produces good behaviour of the catalytic converter during cold starting, because the catalytic converter is in the
10 direct vicinity of the cylinder and is consequently heated rapidly, the catalytic converter filling the entire cross-section of the pipe impairs the functional performance of the exhaust system; this results in a deterioration of the power and a reduction in the torque delivered as well as a
15 deterioration in the fuel consumption. The heated catalytic converter also causes undesired reactions on the cylinder.

It is also already known to provide in the baffle separating the widened chamber from the silencer
20 a central discharge pipe, which passes through the baffle partly into the chamber in front, but these are cases of exhaust systems without catalytic converters for detoxification of the exhaust gases.

It is the object of the invention to improve the
25 exhaust systems described at the beginning in such a way that a good behaviour of the catalytic converter during cold starting and a good degree of conversion of the contaminating gases is produced without having to accept a power loss or an increase in the fuel consumption.

30 The invention achieves the set object in that the catalytic converter is arranged inside the widening chamber and is held, in a way known per se, unsupported, preferably coaxially, by the discharge pipe, directed from the baffle to the exhaust manifold, in a position
35 the same distance away from the chamber wall on all sides.

Although the catalytic converter is not arranged in the exhaust manifold but in the widening chamber, a

comparatively short response time of the catalytic converter is achieved during cold starting since the catalytic converter is exposed to exhaust gases which were not yet able to expand sufficiently and therefore have a high temperature. The temperature of the catalytic converter thus increases rapidly during cold starting, which is also promoted by the mounting of the catalytic converter in the discharge pipe, which mounting has a very low coefficient of thermal conductivity. This arrangement also has the advantage that it does not impair the suction effect of the generally cylindrical chamber since, for reasons of continuity, higher velocities of flow prevail at the free end of the catalytic converter than in the free cross-sectional area of the chamber.

As a result, in comparison with an exhaust system without catalytic converter, neither the power nor the fuel consumption of the engine is adversely affected.

The unsupported mounting of the catalytic converter produces a good degree of conversion, because the end face of the free end of the catalytic converter and also a large part of the outer surface of the catalytic converter are exposed to the exhaust gas flow, without the latter being impaired and thus without worsening the effectiveness of the exhaust system.

In a further development of the invention, the catalytic converter tapers towards the exhaust manifold in the form of a rotational solid or pyramid. This tapering of the catalytic converter at its front end reduces the heat radiating surface in this region, so that a still more rapid heating is produced during cold starting, which leads to a further improved behaviour and to a higher degree of conversion with reduced engine loading. In addition, as a result, a certain adaptation of the free end of the catalytic converter to the shape of the widened chamber and any chamber with frustoconical cross-section between the said widened chamber and the exhaust manifold is achieved, so that the catalytic converter can be brought further forward towards the inlet of the chamber and thus towards the cylinder.

The drawing shows an exemplary embodiment of an exhaust system according to the invention for a two-stroke engine, in simplified representation in a partial section.

- 5 From the outlet slit of the cylinder 1 of a two-stroke engine intended for a two-wheel vehicle, there emerges an exhaust manifold 2, to which a chamber 3, generally cylindrical in cross-section, is connected via a chamber 4, frustoconical in longitudinal cross-section.
- 10 The chamber 3 is separated from the silencer 6 by a baffle 5. From the baffle 5, a discharge pipe 7 is directed towards the exhaust manifold 2 and inserted in its free end is the catalytic converter 8, which is held unsupported, coaxially and the same distance away from the wall of the
- 15 chamber 4 on all sides. The catalytic converter 8 may taper towards the exhaust manifold 2 in the form of a rotational solid, as is indicated by dot-dashed lines.

- It is essential for the invention that the catalytic converter 8 is exposed to flow at its end face and
- 20 the flow passes axially through it, because in this way the expansion of the exhaust gases does not experience any impairment.

PATENT CLAIMS

1. Exhaust system for combustion products with catalytic converter for two-stroke engines, in which the exhaust manifold is connected to a generally cylindrical chamber, separated from a silencer by a baffle, characterized in that the catalytic converter (8) is arranged inside the chamber (3) and is held unsupported, preferably coaxially, in a discharge pipe (7), directed in a way known per se from the baffle (5) to the exhaust manifold (2), in a position the same distance away from the wall of the chamber (3) on all sides.

2. Exhaust system according to Claim 1, characterized in that a chamber (4), frustoconical in longitudinal cross-section, is arranged between the chamber (3), generally cylindrical in cross-section, and the exhaust manifold (2), into which chamber the catalytic converter (8) can extend.

3. Exhaust system according to Claim 1 or 2, characterized in that the catalytic converter (8) is tapered towards the exhaust manifold (2) in the form of a rotational solid or pyramid.

4. Exhaust system for a two-stroke engine having a catalytic converter for cleaning the combustion products and a generally cylindrical chamber connected to the exhaust manifold and separated from a silencer by a baffle, characterized in that the catalytic converter is mounted in the end of a discharge pipe which is directed from the baffle towards the exhaust manifold within the chamber and projects freely, preferably coaxially, from the discharge pipe so as to be equally spaced from the walls of the chamber.